

PATENT COOPERATION TREATY

From the INTERNATIONAL BUREAU

PCT

NOTIFICATION OF ELECTION

(PCT Rule 61.2)

To:

Assistant Commissioner for Patents
United States Patent and Trademark
Office
Box PCT
Washington, D.C.20231
ETATS-UNIS D'AMERIQUE

in its capacity as elected Office

| | |
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| Date of mailing (day/month/year) 20 June 2000 (20.06.00) | |
| International application No. PCT/US99/19580 | Applicant's or agent's file reference T7029.CIP.PCT |
| International filing date (day/month/year) 26 August 1999 (26.08.99) | Priority date (day/month/year) 24 September 1998 (24.09.98) |
| Applicant SELFRIDGE, Alan, Robert et al | |

1. The designated Office is hereby notified of its election made:

☒ in the demand filed with the International Preliminary Examining Authority on:

14 April 2000 (14.04.00)

☐ in a notice effecting later election filed with the International Bureau on:

2. The election ☒ was

☐ was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

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|---|---|
| The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No.: (41-22) 740.14.35 | Authorized officer Maria Kirchner Telephone No.: (41-22) 338.83.38 |
|---|---|

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US99/19580

A. CLASSIFICATION OF SUBJECT MATTER

IPC(6) : H04R 3/00, 25/00

US CL : 381/111, 190

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 381/111, 190, 191, 173, 174; 29/594; 310/324, 800

Documentation searched other than minimum documentation to the extent to which such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EAST

search terms: parametric film piezo piezoelectric electrothermal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category* | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|---------------|--|--|
| X --- Y | US 4,056,742 A (TIBBETTS) 01 November 1977, figures 1 and 2. | 1-11, 16, 17, 24-35, 39, 40, 42, 43, 79, 80, 82, 83, 85, 88-93 ----- 19-23, 46-52, 56-61 |
| Y | US 4,823,908 A (TANAKA et al) 25 April 1989, figure 2. | 19-23, 46-52, 56-61 |
| X | US 4,242,541 A (ANDO) 30 December 1980, abstract. | 98, 107, 108, 115 |



Further documents are listed in the continuation of Box C.



See patent family annex.

| | |
|--|---|
| * Special categories of cited documents: | * T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention |
| * A* document defining the general state of the art which is not considered to be of particular relevance | * X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone |
| * E* earlier document published on or after the international filing date | * Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art |
| * L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) | * &* document member of the same patent family |
| * O* document referring to an oral disclosure, use, exhibition or other means | |
| * P* document published prior to the international filing date but later than the priority date claimed | |

Date of the actual completion of the international search

14 JANUARY 2000

Date of mailing of the international search report

07 February 2000 (07.02.00)

Name and mailing address of the ISA/US
Commissioner of Patents and Trademarks
Box PCT
Washington, D.C. 20231

Facsimile No. (703) 305-3230

Authorized officer

PING LEE

Telephone No. (703) 305-3900

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US99/19580

| C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT | | |
|---|--|-----------------------|
| Category* | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
| A | US 4,322,877 A (TAYLOR) 06 April 1982, abstract, figures 1 and 4. | 6-10, 29-32 |
| | US 5,142,511 A (KANAI et al) 25 August 1992, abstract, figures. | 13, 14, 36-38 |

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US99/19580

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This international report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

Please See Extra Sheet.

1. ☒ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

☐

The additional search fees were accompanied by the applicant's protest.

☒

No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

International application No. . . .

PCT/US99/19580

BOX II. OBSERVATIONS WHERE UNITY OF INVENTION WAS LACKING

This ISA found multiple inventions as follows:

This application contains the following inventions or groups of inventions which are not so linked as to form a single inventive concept under PCT Rule 13.1. In order for all inventions to be searched, the appropriate additional search fees must be paid.

Group 1, claim(s) 1-45, 56-61, and 91-93, drawn to a parametric speaker composed of a film without having the film being sandwiched by the support means or pressured by a constant pressure means and a method of generating audio signal using this parametric speaker.

Group 2, claim(s) 46-55, and 62-90, drawn to a piezoelectric speaker composed of a pressure means to apply pressure to the apertures covered by a film.

Group 3, claim(s) 94-97, drawn to a parametric speaker operated in push-pull manner.

Group 4, claim(s) 98-114, drawn to a parametric speaker with a core member establishing magnetic field.

Group 5, claim(s) 115 and 116, drawn to an ultrasonic emitter device having a dielectric diaphragm and an array of cavities being tuned to a common resonant frequency.

The inventions listed as Groups 1-5 do not relate to a single inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: each group as listed has its own special technical features that enable each group as a separate invention. Group 1 is a speaker generating parametric audio output with a film having at least one surface not being covered by supporting member and not being pressured by a constant pressure means which is a special technical feature not shared by other groups. Group 2 is a speaker device with a film being pressed by a pressure means which is one of the special technical feature not shared by other groups. Group 3 is a parametric speaker operating in a push-pull manner which is a special technical feature not shared by other groups. Group 4 is an emitter device with a core member creating magnetic field which is a feature not shared by other groups. Group 5 is an emitter device with a dielectric diaphragm in contact with an array of cavities being tuned to a common resonant frequency which is a special technical feature not shared by other groups.